The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1.   A method for providing a virtual environment for simulating the arrangement of a plurality of parts into an assembly, comprising:

(a)   creating a model in a design environment for each part, each model having a geometry that corresponds to a part;

(b)   translating each model into a virtual part in the virtual environment, the design environment being integrated with the virtual environment; and

(c)   enabling each virtual part to be positioned in an assembly within the virtual environment, wherein the positioning of each virtual part enables a simulation to be performed for the arrangement of the plurality of parts into the assembly.

2.   The method of Claim 1, further comprising, enabling the simulation to be modified, a modification enabling another simulation to be performed, and when the modification causes a change in the virtual part, causing the corresponding model to automatically include the change to the virtual part.

3.   The method of Claim 1, further comprising, receiving a user controlled command by a virtual reality peripheral device for arranging of the plurality of parts into the assembly.

4.   The method of Claim 1, wherein the virtual environment is formed by a generation of three-dimensional views.

5.   The method of Claim 1, further comprising, providing a menu display in the virtual environment, the menu display configured to receive commands from a user by the use of a virtual reality peripheral device.

6. The method of Claim 1, further comprising, translating a constraint information set of the plurality of parts from a parametric computer aided system to the virtual environment.

7. The method of Claim 6, wherein the constraint information set comprises multiple constraint values.

8. The method of Claim 6, wherein the constraint information set is used to define kinematic motions of the virtual parts.

9. The method of Claim 1, further comprising, translating a geometry information set of the plurality of parts from a parametric computer aided system to the virtual environment.

10. A method for processing constraint information set for limiting the motion of a part associated with the constraint information set, comprising:

comparing the part constraint information set with a predetermined constraint information set; and

limiting the motion of the part to only move about an axis, if the predetermined constraint information set dictates a limitation about an axis coordinate.

11. A method for processing a constraint information set for limiting the motion of a part associated with the constraint information set, comprising:

comparing the constraint information set with a predetermined constraint information set; and

limiting the motion of the part to only move about a plane, if the predetermined constraint information set dictates a limitation about a plane.

12. A method for processing multiple constraint information sets for simulating the moment of a first and second part in a computer simulated virtual environment, wherein a first constraint information set is associated with the first

part, and wherein a second constraint information set is associated with the second part, the method comprising:

determining the presence of a predetermined type of movement between the first and second parts; and

associating the first and second constraint information sets, if there is a presence of a predetermined type of movement between the first and second parts.

13.   The method of Claim 12, further comprising:

determining the presence of redundant data in the first and second constraint information sets; and

determining the presence of a predetermined type of movement between the first and second coordinate indicator, if the first and second constraint information sets do not contain redundant information.

14.   The method of Claim 12, wherein the first and second constraint information sets define an axis.

15.   The method of Claim 12, wherein the first and second constraint information sets define a plane.

16.   The method of Claim 12, wherein the predetermined type of movement includes a first and second constraint information each define a first and second axis, wherein the first and second axis are parallel with respect to each other.

17.   The method of Claim 12, wherein the predetermined type of movement includes a first and second constraint information each define a first and second plane, wherein the first and second planes are not parallel with respect to each other.

18.   The method of Claim 12, wherein associating the first and second constraint information sets includes snapping the first part with the second part.

19.   A system for providing a virtual environment, the system comprising:

a parametric computer aided drawing system having an avatar communicatively connected the parametric computer aided drawing system;

a virtual assembly design environment system communicatively connected the parametric computer aided drawing system;

program code for simulating the arrangement of a plurality of parts into an assembly in a virtual environment, which when executed, perform the steps of:

creating a model in a design environment for each part, each model having a geometry that corresponds to a part;

translating each model into a virtual part in the virtual environment, the design environment being integrated with the virtual environment; and

enabling each virtual part to be positioned in the virtual environment, the positioning of each virtual part enables a simulation to be performed for the arranging of the plurality of parts into the assembly.

20.   The method of Claim 19, wherein the program code, which when executed, further performs the step of, enabling the simulation to be modified, a modification enabling another simulation to be performed, and when the modification causes a change in the virtual part, causing the corresponding model to automatically include the change to the virtual part.

21.   The system of Claim 19, further comprising a database containing information pertaining to trajectory and sequence information for each part.

22.   The system of Claim 19, wherein the avatar includes one or more virtual reality peripheral devices for generating electronic signals that dictate the movement of a user.

23.   The method of Claim 19, wherein the program code further performs the step of providing a menu display in the virtual environment, the menu display configured to receive commands from a user.

24.   A method for modeling interactivity between a glove and a part, comprising:

simulating a virtual glove grabbing a virtual part, where the simulated movements of the virtual glove correspond to movements sensed by the glove with respect to the part;

calculating a twirl transform, wherein the twirl transform is based on the movements of the glove; and

utilizing the twirl transform to generate a plurality of images of the virtual glove and the virtual part, thereby modeling the interactivity and movement of the virtual glove and the virtual part.

25.   The method of Claim 24, further comprising:

determining the intersection between the hand and the part;

determining the if a user is attempting to grip the part, if the hand and the part intersect; and

simulating a virtual glove grabbing a virtual part, if a user is attempting to grip the part.

26.   The method of Claim 24, further comprising, receiving a data set from the virtual hand, wherein the data set dictates the movement of the virtual hand.

27.   A system for providing a virtual environment, the system comprising:

a computer aided drawing system having an avatar communicatively connected the parametric computer aided drawing system;

a virtual assembly design environment system communicatively connected the computer aided drawing system;

program code for modeling interactivity between a hand and a part, which when executed, perform the steps of:

calculating a twirl transform, wherein the twirl transform is based on the movements of the glove; and

utilizing the twirl transform to generate a plurality of images of the virtual glove and the virtual part, thereby modeling the interactivity and movement of the virtual glove and the virtual part.

28.   The system of Claim 27, wherein the avatar includes a glove having a palm and a plurality of fingers for generating electronic signals that dictate the movement of a user.

29.   The system of Claim 28, wherein the glove includes a plurality of sensors attached to the palm for sensing the gripping of the parts between the palm and the plurality of fingers.

30.   The system of Claim 28, wherein the glove includes five sensors attached to the palm for sensing the gripping of the parts between the palm and the plurality of fingers.

31.   The system of Claim 28, wherein the glove includes a plurality of line segments in the plurality of fingers for sensing the amount of twirl in the plurality of fingers.